



A history of technical innovation; a future

CH2M HILL's growth is attributable, in part, to the firm's preeminent technological position in the marketplace. What

Giving clients what they want

As an outgrowth of CH2M HILL's Intellectual Property initiative, Technology Commercialization is a key means for growing the firm and improving client satisfaction. It encompasses the innovation, legal protection—and commercialization—of in-house technology.

Clients, particularly those in the United States, have historically required engineering firms to study problems, evaluate available technologies and design solutions. However, with the growing trend toward design-build contracting throughout the U.S., clients are looking to companies that offer full-service project delivery. As competition becomes increasingly global, the firm is competing against companies that also research, develop, manufacture, and distribute technology. This Technology Commercialization provides an economy of scale that can be leveraged to significant competitive advantage.

Employees who are interested in developing their innovative ideas are encouraged to contact their regional technology

manager or business unit technology director. For more information on Technology Commercialization, peruse the business unit technology web sites and the Intellectual Property Web site on the Virtual Office at Company Resources | Intellectual Property, or contact Michelle.Girts@ch2m.com (503-235-5022, ext. 4423 or #6 43 4423).

Business group technology directors and regional technology managers offer:

- Insight and tools for developing and submitting ideas
- Information on technology critical to CH2M HILL and how to leverage this technology in the marketplace
- Tips on protecting trade secrets, patents, trademarks, copyrights and other intellectual property

Visit the IPO Web site on the Virtual Office at Company Resources | Intellectual Property for a wealth of information.

Driving global expansion

Arguably, the most significant technological contribution to the firm's growth during the past 60 years has been in water reclamation. CH2M HILL pioneered the application of advanced treatment technology at South Lake Tahoe in the western U.S. in the late 1960s, treating wastewater to near drinking-water quality.

Based on the success at Lake Tahoe, the firm was hired by the Upper Occoquan Sewage Authority in northern Virginia in 1971 to help meet new, stringent water quality standards. This project resulted in a three decade relationship with the Authority and served as the beachhead for our east coast expansion.

Today, the market is being shaped by membrane technologies. CH2M HILL has patented a membrane wastewater treatment method which has

helped cement our position as the partner of choice for advanced water reclamation projects around the world. Looking forward, the NEWater facilities in Singapore set the global standard for the application of membrane technology. Like South Lake Tahoe, these trophy projects will serve as the foundation of our global expansion.

Leveraging cross-business-group synergies

CH2M HILL is developing a suite of biosolids management technologies that can be marketed to clients across business groups. One such technology is the Hydro AnO2 waste-to-energy system. It maximizes clients' value chain by reducing solids volume, recovering energy and producing a usable organic byproduct from food waste, bio-solids, and other biodegradable organic solid waste commonly produced in many of our markets.

The system uses pressurized heat and anaerobic biological processes to biodegrade organic matter to produce a methane-rich biogas that can be used to generate power. The remaining solids can either be composted to produce fertilizer or sent to landfills at a fraction of the original volume.

For more information on the Hydro AnO2 process, contact John.Lee@ch2m.com. For more information on CH2M HILL's biosolids management technologies, contact John.Wood@ch2m.com.





in Technology Commercialization

follows are highlights of the firm's technical heritage and promising areas in Technology Commercialization.

Solving security challenges with integrated information solutions

CH2M HILL is at the forefront of incident response solutions with the iCIT™ (I-see-it) software tool. iCIT software provides a common operational platform to first responders for incident management. By integrating visual, wireless and IT communications with desktop GIS, iCIT software is able to provide multiple agencies a single real-time platform to efficiently manage incident response. iCIT software provides:

- Simultaneous management of multiple emergency incident sites to emergency responders and command structure support activities
- Critical geographic, demographic, and textual data
- Hazardous release plumes modeling capability
- Optimal emergency response and evacuation routes
- Optimal evacuation routes from an incident
- Incident resource management capability

For more information, contact Raja.Kadiyala@ch2m.com.



Diversifying revenues in the semiconductor market

In a business with high capital costs, short time-to-market, and commodity products, helping manage tight operating margins in the semiconductor industry is critical to success.

In the mid 1990s, IDC approached ST Microelectronics with an innovative, patented air handler design for industrial clean room applications. The OptiMAH system replaces air contaminated through the manufacturing process with slightly more treated "make-up" air, at high operational efficiency.

ST Microelectronics agreed to pilot test the design and IDC licensed the technology to a manufacturing partner under a royalty agreement. The pilot test was a success and the OptiMAH system has been installed in a number of facilities in the past 10 years, resulting in

around \$500,000 in royalties. For more information contact Dennis.Grant@ch2m.com.



Simple solution pays big dividends in nuclear D&D

The success of nuclear decontamination and decommissioning depends in no small part on being able to ship contaminated materials to storage sites. The traditional approach had been to cut up and pack material into 55-gallon drums—an impractical and costly proposition when dealing with large pieces of highly contaminated equipment.

Regulations allowed for surface-contaminated objects below a certain contamination threshold to be shipped as low-level waste in larger containers. The challenge was to devise a process that would reduce contamination levels below the threshold, and to develop a reliable instrument for measuring radioactivity to prove that this threshold had been met.



Cerium nitrate is a substance historically used to recover plutonium in the weapons manufacturing process. This substance, in mist form, proved to be an effective surface decontaminant. The Kaiser-Hill team at a nuclear cleanup site in Colorado proved that large pieces of process equipment met the criteria for low-level waste and could be shipped in larger containers, reducing hazardous and costly cutting operations.

This saved over \$150 million in planned D&D costs—30 percent of which was awarded to Kaiser-Hill as part of its incentive-based contract.

For more information contact David.Maloney@ch2m.com.

Advanced design tools deliver high value, margins

The advances made in design and construction automation have dramatically increased the firm's ability to deliver value to clients throughout the life of their facilities. Modeling capabilities allow clients to better manage assets over time, while providing global project delivery teams the ability to design and build more efficiently.

Today's applications enable reuse of project modeling data to achieve efficiency across all of the firm's designs. By integrating with dynamic simulation models such as INSIM™ software, designers can simulate "what if?" scenarios with continually varying input parameters and view the impacts on construction sequencing, facility performance and operating costs. These models also enable the users to optimize operating strategies to provide the greatest lifecycle value.

Since CH2M HILL is increasingly the contractor and owner/operator of facilities it designs, these advanced features are critical to properly managing risk and margin performance. For more information contact Ben.Ferguson@ch2m.com.

